



Instruction Manual

Type 67F & 67FR Filter Regulators

Form 1692, July 1978

WARNING

To avoid injury or damage, these regulators should be installed, operated, and maintained in accordance with federal, state, and local codes, rules and regulations, and Fisher instructions. Only a qualified person must install or service a regulator. Be certain the control spring range label is updated to accurately indicate any field changes in equipment, materials, service conditions, or pressure settings.

Immediately call a qualified technician in case of trouble. If venting occurs or a leak develops in the system, it indicates that service is required. Failure to correct the situation immediately may create a hazardous condition.

INTRODUCTION

Scope of Manual

This manual describes and provides instructions and parts lists for Type 67F and 67FR regulators. Although sometimes shipped separately for line or panel mounting, these regulators usually are shipped installed on other equipment. However, instructions and parts lists for other equipment will be found in separate manuals.

Product Description

Type 67F and 67FR self-operated aluminum-body filter regulators provide constant reduced pressures in a variety of applications. They commonly are used as supply pressure regulators for pneumatic instruments as shown in figure 1.

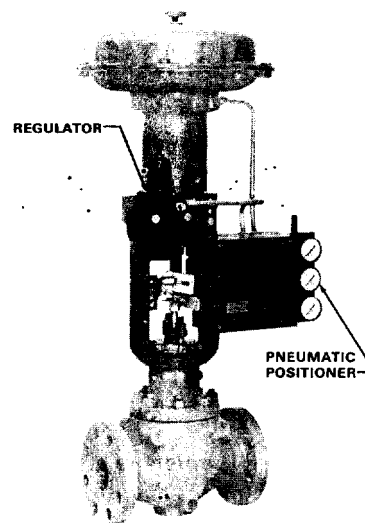


Figure 1. Type 67F or 67FR Regulator Mounted on Control Valve Assembly

A Type 67F or 67FR regulator with cellulose filter removes particles greater than 0.0016 inch (0.040 mm) in diameter. An aluminum-and-brass or stainless steel filter removes particles greater than 0.002 inch (0.051 mm) in diameter.

Type 67FR regulators additionally have integral low-capacity relief valves. In these constructions, the valve stem seats against an orifice in the diaphragm assembly. A downstream pressure increase above the set point will move the diaphragm assembly off the valve stem, venting the excess pressure through a hole drilled or tapped in the spring case.

Specifications

Table 1 gives some general Type 67F and 67FR regulator ratings and other specifications. A label on the spring case

Table 1. Specifications

BODY SIZE AND END CONNECTION STYLE	1/4-inch NPT screwed	MAXIMUM EMERGENCY OUTLET PRESSURE	50 psig (3.4 bar) over outlet pressure setting, or 110 psig (7.6 bar), whichever is greater
MAXIMUM ALLOWABLE INLET PRESSURE	250 psig (17 bar)	TEMPERATURE CAPABILITIES	Standard Elastomers: -20°F to 150°F (-29°C to 66°C) High-Temperature Elastomers: 0°F to 350°F (-18°C to 177°C)
OUTLET PRESSURE RANGES	3 to 100 psig (0.21 to 6.9 bar) in four ranges with the springs shown in parts list key 9	PRESSURE REGISTRATION	Internal

gives the recommended and actual control spring range for a given regulator as it comes from the factory.

INSTALLATION

WARNING

Personal injury or system damage may result if a regulator is installed without adequate protection from physical damage or where service conditions could exceed regulator or other equipment ratings. A Type 67FR regulator must not be used on hazardous gas service unless the vent is piped to a safe area.

Overpressuring any portion of a regulator or associated equipment may cause leakage, part damage, or personal injury due to bursting of pressure-containing parts or explosion of accumulated gas.

Like most regulators, a Type 67F or 67FR regulator has an outlet pressure rating lower than its inlet pressure rating. Although the Type 67FR regulator provides very limited downstream overpressure protection, complete downstream protection is needed with both regulators if the actual inlet pressure can exceed the regulator outlet pressure rating or the pressure ratings of any downstream equipment.

Regulator operation within ratings does not preclude the possibility of damage from external sources or from debris in the lines. A regulator should be inspected for damage periodically and after any overpressure condition.

Note

If the regulator is shipped mounted on another unit, install that unit according to the appropriate instruction manual.

With a regulator that is shipped separately, make sure that there is no damage to or foreign material in the regulator, and that all tubing and piping has been blown free. Install the regulator so that flow through it is from IN to OUT as marked on the regulator body. Cutout dimensions for a panel-mounting regulator are shown in figure 2.

For best filter drainage, orient the drain valve (key 17, figure 2) to the lowest possible point on the filter cap (key 25, figure 2). To keep the spring case vent from being plugged or the spring case from collecting moisture, corrosive chemicals, or other foreign material, orient the vent to the lowest possible point on the spring case or otherwise protect it. Filter/drain valve orientation may be changed by rotating the filter cap with respect to the regulator body, and spring case/vent orientation may be changed by rotating the spring case with respect to the body. Any Type 67F or 67FR regulator with a tapped spring case may be remotely vented by installing obstruction-free tubing or piping into the 1/4-inch NPT vent tapping. Provide protection on a remote vent by installing a screened vent cap into the remote end of the vent pipe.

If using pipe, apply a good grade of pipe compound to the pipe threads before making the connections. Install tubing or piping into the 1/4-inch NPT inlet connection, and also into the 1/4-inch NPT outlet connection unless this connection already has been factory-piped to another unit.

WARNING

To avoid possible injury or equipment damage, never adjust the control spring to produce an outlet pressure higher than the upper limit of the outlet pressure range for that particular spring. If the desired outlet pressure is not within the range of the control spring, install a spring of the proper range according to the "Maintenance" section.

Each regulator is factory-set for the pressure setting specified on the order. If no setting was specified, outlet pressure was factory-set at the midrange of the control spring.

STARTUP

Key numbers are referenced in figure 2.

With proper installation completed and downstream equipment properly adjusted, slowly open the upstream and downstream shutoff valves while using pressure gauges to monitor pressure. Regulator outlet pressure may be monitored on a gauge installed at some point downstream from the regulator, such as the supply pressure gauge of a pneumatic instrument for which the regulator is providing reduced pressure. Or, outlet pressure may be monitored on a gauge (key 21, not shown) installed on the body of a regulator with a tapped side outlet. If the regulator has no gauge but the side outlet is tapped and plugged, the side plug (key 21, not shown) may be removed and a gauge temporarily installed for monitoring.

If outlet pressure adjustment is necessary, monitor outlet pressure with a gauge during the adjustment procedure. Standard Type 67F and 67FR regulators are adjusted by loosening the locknut (key 11, if used) and turning the adjusting screw or handwheel (key 10) clockwise to increase or counterclockwise to decrease the outlet pressure setting. Then tighten the locknut (if used) to maintain the adjustment position. On some regulators, a closing cap (key 28, not shown) will have to be removed before adjustment and replaced afterward.

SHUTDOWN

First close the nearest upstream shutoff valve and then close the nearest downstream shutoff valve to vent the regulator properly. Next, open the vent valve between the regulator and the downstream shutoff valve nearest to it. All pressure between these shutoff valves will be released through the open vent valve, since a Type 67F or 67FR regulator remains open in response to the decreasing downstream pressure.

MAINTENANCE

Regulator parts are subject to normal wear and must be inspected and replaced as necessary. The frequency of inspection and replacement of parts depends upon the severity of service conditions or the requirements of local, state, and federal rules and regulations. The drain valve (key

17, figure 2) should be opened periodically to empty accumulated moisture from the filter cap (key 25, figure 2).

WARNING

To avoid personal injury or equipment damage, do not attempt any maintenance or disassembly without first isolating the regulator from system pressure and relieving all internal pressure from the regulator.

This procedure is to be performed if changing the control spring for one of a different range, or if inspecting, cleaning, or replacing any other parts. Key numbers are referenced in figure 2.

Note

If sufficient clearance exists, the body assembly (key 1) may remain mounted on other equipment or in a line or panel unless the entire regulator will be replaced.

1. To gain access to the diaphragm assembly (key 7), control spring (key 9), or upper spring seat (key 8), loosen the locknut (key 11, if used) and turn the adjusting screw (key 10) counterclockwise until compression is removed from the spring. Remove the machine screws (key 12) and separate the body assembly from the spring case (key 2). Inspect the removed parts and replace as necessary. Make sure the registration hole is free from debris. After assembly, make sure of the proper control spring setting according to the "Startup" section, and re-mark the control spring label if necessary.

2. To gain access to the valve plug (key 4) or filter element (key 29) for replacement and/or cleaning, use a twelve-point socket wrench to remove the cap screws (key 18) and then remove the filter cap (key 25), gasket (key 19), filter post (key 16), spring washer and gasket (keys 27 and 26) if used, and adaptor (key 13). Be careful to keep the valve plug spring (key 6) and valve plug spring seat (key 5) from falling out and possibly getting lost while removing the valve plug. Inspect the removed parts and replace as necessary. Make sure the valve plug seating surfaces are free from debris. A dirty filter element may be cleaned with solvent and blown dry.

PARTS ORDERING

When corresponding with the Fisher representative about this regulator, include the type number and all other pertinent information stamped on the bottom of the filter cap and on the control spring label. Specify the eleven-character part number when ordering new parts from the following parts list.

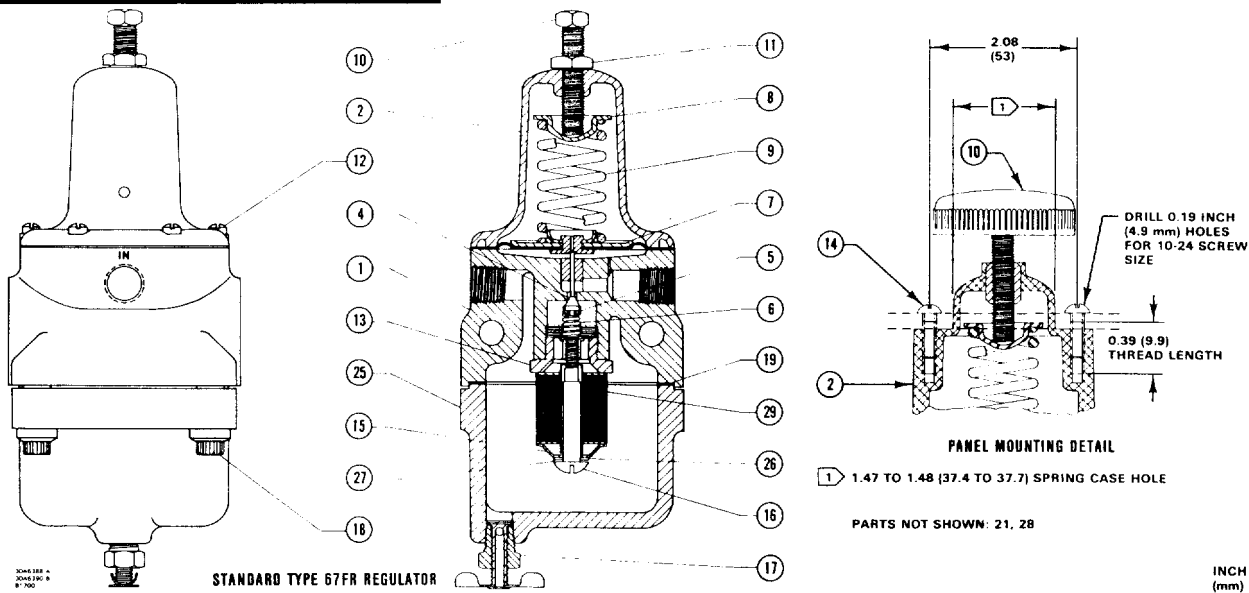


Figure 2. Type 67F and 67FR Regulator Assemblies

PARTS LIST (figure 2)

Key	Description	Part Number	Key	Description	Part Number
1	Body Assembly One outlet Alum w/brass bushing (std)	1C1270 000A2	7*	Diaphragm Assembly (includes pl steel diaphragm plate) Type 67F w/o relief Nitrile w/aluminum pusher post	1B7980 000B2
	Alum w/SST bushing	1C1270 000B2		Nitrile w/SST pusher post	1B7980 X00A2
	Two outlets Alum w/brass bushing (std)	1C1270 000C2		Viton w/aluminum pusher post	1B7980 000C2
	Alum w/SST bushing	1C1270 X00A2		Type 67FR w/relief Nitrile w/brass relief valve seat	1B7989 000B2
2	Spring Case Std, aluminum	2B7974 08012		Nitrile w/SST relief valve seat	1B7989 000C2
	1/4-inch NPT tapped, brass w/o closing cap	1E1674 000A2		Viton w/brass relief valve seat	1B7989 X0012
	w/closing cap	10A3075 X012	8	Upper Spring Seat, steel, Zn pl	1B7985 25062
	Panel mtg, zinc w/SST insert	3B9855 000B2	9	Control Spring, pl steel 3 to 20 psig (0.21 to 1.4 bar) range, green	1B9860 27212
4*	Valve Plug & Stem Nitrile w/brass stem	1D5604 000A2		5 to 35 psig (0.34 to 2.4 bar) range, cadmium	1B7883 27022
	Nitrile w/SST stem	1D5604 000B2		30 to 60 psig (2.1 to 4.1 bar) range, blue	1B7884 27022
	Viton† w/brass stem	1N3798 71662		35 to 100 psig (2.4 to 6.9 bar) range, red	1K7485 27202
	Viton w/SST stem	1N3798 000C2	10	Adjusting Screw Std, pl steel	1B7986 28982
5	Valve Plug Spring Seat For use only w/brass stem, aluminum	1E5322 11032		For 1/4 inch NPT tapped spring case, pl steel	1H3050 28982
	For use only w/SST stem, 316 SST	1L2511 35072		Handwheel Std, right-hand thread, zinc	1B7992 000A2
6	Valve Plug Spring, 302 SST	1C1273 37022		Right hand thread, chrome pl steel	1U1715 000C2
				Left hand thread, zinc	1L2232 44012
			11	Locknut, pl steel (not used w/panel-mtg regulators)	1A9463 24122
			12	Machine Screw, pl steel (6 req'd)	1B7839 28982
			13	Adaptor, aluminum	1C1274 09012
			14	Mounting Screw (for use only w/panel-mtg. regulators), steel (2 req'd)	1C2760 28992
			15	Washer, aluminum	1C1276 11992
			16	Filter Post, aluminum	1C1277 09032
			17	Drain Valve Brass	1K4189 18992
				Aluminum	1K4189 000B2
				SST	AH3946 000B2
			18	Cap Screw, steel, Cd pl (4 req'd)	1K7647 24052
			19*	Gasket, neoprene	1C1280 03012
			21	Pipe Plug (for use only w/2-outlet body, not shown) Hex head, steel, Cd pl	1D7548 28982
				Square head, brass	1A5726 14012
				Socket head, steel	1C3335 28992
			21	Pressure Gauge‡ (not shown) 0 to 30 psig	1J9460 99012
				0 to 60 psig	1J9752 99012
				0 to 100 psig	1J9753 99012
				0 to 160 psig	1J9754 99012
			25	Filter Cap, aluminum	2C1272 08042
			26*	Gasket (for use only w/plain cellulose filter element), asbestos	1F8268 04022
			27	Spring Washer (for use only w/plain cellulose filter element), steel	1H8851 28982
			28	Closing Cap (for use only w/tapped spring case 10A3075 X012), brass (not shown)	1H2369 14012
			29*	Filter Element Alum w/brass end caps	1C1275 99012
				Plain cellulose	1F2577 06992
				SST	1J9892 38992

*Recommended spare part.

†Trademark of Du Pont Co.

‡Consult your Fisher representative for gauges in other units.



WORLDWIDE MANUFACTURING, SALES, SERVICE

Fisher Controls Company

Specifications are subject to change.

Metric equivalents of English units
are shown in parentheses and are in
millimeters unless otherwise noted.

Printed in U.S.A.